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09/973,302	10/09/2001	David J. Chaiko	051583-0254	6036

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FOLEY & LARDNER  
150 EAST GILMAN STREET  
P.O. BOX 1497  
MADISON, WI 53701-1497

EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 06/23/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/973,302

Applicant(s)

CHAIKO, DAVID J.

Examiner

Katarzyna Wyrozebski Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

*Election/Restrictions*

1. Claims 25-31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group II, there being no allowable generic or linking claim.

Election was made **without** traverse in Paper No. 5. Examiner acknowledges cancellation of claims 25-31.

*Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 4, 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites that polymer utilized in the composition is monoalkyl ether derivative. First, term monoalkyl ether alone is not a polymer. Second, use of the term "derivative" renders claim indefinite since it is not clear as to what type of the polymer applicants are referring to. The same analogy applies to claim the term "based" in claim 13.

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Claim 20 contains limitation of composite comprising less than about 2 % of water. Such limitation is rendered indefinite, since it is not clear if the applicants require the amount of water to be less than 2% or about 2%.

### *Claim Objections*

4. Claim 11 is objected to because of the following informalities: Talc is not a phyllosilicate. Appropriate correction is required.

Claim 17, term "in compatible solvent" is repeated twice.

### *Claim Rejections - 35 USC § 102*

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Beall (US 5,552,469).

The prior art of Beall discloses intercalates comprising water-soluble polymer and smectite type clay.

The polymer utilized in the intercalation process of Beall, according to claim 4 contains functionality such as hydroxyl. The examples usually disclose use of polyvinyl alcohol, polyvinyl pyrrolidone (70-99% hydrolyzed). Other suitable polymers include polyacrylic acid, polymethyl methacrylic acid (col. 10) as well as block copolymers of ethylene oxide with propylene oxide (col. 11, lines 55-65). Polymeric component according to claims 4-7 of Beal comprises at least 20 wt % and in most preferred embodiment it is 50-100 wt %. Claim 13 of the prior art of Beall also suggests that more than one polymer can be utilized as an intercalant.

Clay component of the prior art of Beall is smectite type clay such as montmorillonite, nontronite, beidelite, hectorite and the like (col. 8, lines 10-16). The clay component of the prior art of Beal will take up the difference calculated from the amount of the polymer discussed above.

Claim 1 of the prior art of Beall also teaches that the intercalating polymer increases basal spacing between the platelets of the silicate by at least 10 angstroms. In addition figures of the prior art of Beal (Figure 3 and 4) disclose montmorillonite clay intercalated with PVP, wherein the molecular weight of PVP is 10,000 and 40,000 respectively. From the XRD of the Figures 3 and 4, it is evident that the basal spacing has increased for the polymer having higher molecular weight.

In the light of the above disclosure, the prior art of Beall anticipates the requirements of claims rejected above.

2. Claims 1-8, 10-12, 16-18, 21, 22, 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Blanton (US 6,555,610)

The prior art of Blanton discloses composition comprising intercalated clay and polymeric component.

Clay component of the prior art of Blanton includes smectite type clay such as montmorillonite (claim 10), which can be organically modified. Clay of Blanton can be utilized in an amount of 20-80 wt %.

Clay of Blanton is intercalated with two polymers, which are according to examples polyvinyl pyrrolidone and polyethylene oxide.

Examples of the prior art of Blanton disclose that the composition resulting from intercalation was transparent.

Intercalation of the clay component also resulted in increase of the basal spacing between the clay platelets. The fact that the basal spacing increases with increasing molecular weight of the polymer is not only shown in the prior art of Beall but it would be inherent that the bigger the polymer, the more of it one has to intercalate in-between the platelet hence, the increase in basal spacing.

Birefringence, depends on the filler and polymer as well as their concentrations. Since the polymer of the present invention and the montmorillonite clay are also two major

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components of the prior art of Blanton as well as the amounts in which the two components are utilized, the property of the composition is expected to be the same. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed Cir 1990).

In the process of Blanton, the composition comprising clay, PVP and PEO is flocculated and solvent is removed to make flocculate. Flocculate is then recovered and dried in a vacuum.

The prior art of Blanton also teaches using additives such as surfactants, colorants and the like (col. 7, lines 2-12). Resulting composition comprising polymer and clay will inherently possess improved gas barrier property. In addition if clay is not purified the product will exhibit haze instead of clarity or transparency. Support for examiner's allegation can be found, for example, in the disclosures of US 6,403,231 to Mueller or US 6,034,163 to Barbee.

In the light of the above disclosure, the prior art of Blanton anticipates requirements of claims rejected above.

3. Claims 1-3, 7-9, 15, 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Carter (US 5,229,451).

The prior art of Carter discloses liquid crystalline type composite comprising polymer and organoclay.

According to claim 1 of the prior art of Carter, clay component is utilized in an amount of 0.1-5 wt %, the balance being the polymer.

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According to the example 1 of Carter, polymer is wholly aromatic anisotropic polyester, which can be melt-processed using extruder. Per specification of Carter, polymer should have functionality such as OH or carboxy (col. 6, lines 56-57).

Throughout the examples Carter utilizes smectite type clay such as Clayton and Benton that is organically modified. Benton and Clayton are tradenames for bentonite. The clay upon treatment with organic compound and then incorporation into the polymer results in swelling of the clay.

In the light of the above disclosure, the prior art of Carter anticipates the requirements of claims rejected above.

4. Claims 13, 14, 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record as well as the prior art found in during search did not provide applicable prior art citing polyethylene glycol and polypropylene glycol as either polymeric intercalants or surfactants in a clay composites.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*Katarina W. Jurelschke*

KIWL

June 18, 2003